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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/810,887	03/29/2004	Hak-Sun Chang	6192.0361.US	1078

7590 06/03/2005
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EXAMINER

VU, PHU

ART UNIT PAPER NUMBER

2871

DATE MAILED: 06/03/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

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Office Action Summary	Application No.	Applicant(s)	
	10/810,887	CHANG ET AL.	
	Examiner	Art Unit	
	Phu Vu	2871	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
 - If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
 - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
 - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 March 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-23 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-23 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 1, 2, 5- 7, and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Okamoto et al. US Patent No. 5825445 in view of Wen et al. US Patent No. 6208401.

Regarding claim 1, Okamoto teaches a liquid crystal display comprising an upper substrate (fig. 3 element 11) with common electrode (fig. 3 element 11a) thereon, a lower substrate with pixel electrode thereon, a liquid crystal layer (fig. 3 element 13) injected between the upper and lower substrate, wherein liquid crystal molecules on both substrates are aligned antiparallel to each other (see fig. 3 LC molecules 13a and 13b).

Okamoto fails to teach spacers positioned between the upper substrate and the lower substrate, and wherein the color of the spacers is black. Wen teaches a black spacer to avoid light dispersion (see column 3 lines 6-12) and provide spacing between the substrates. Therefore, at the time of the invention it would have been obvious to combine black spacers with Okamoto's LCD in order to avoid light dispersion and provide spacing between the substrates.

Regarding claim 6, Okamoto teaches a liquid crystal display comprising an upper substrate (fig. 3 element 11) with common electrode (fig. 3 element 11a) thereon, a lower substrate with pixel electrode thereon, a liquid crystal layer (fig. 3 element 13) injected between the upper and lower substrate, wherein the alignment of the liquid crystal layer is OCB type (see abstract).

Okamoto fails to teach spacers positioned between the upper substrate and the lower substrate, and wherein the color of the spacers is black. Wen teaches a black spacer to avoid light dispersion (see column 3 lines 6-12) and provide spacing between the substrates. Therefore, at the time of the invention it would have been obvious to combine black spacers with Okamoto's LCD in order to avoid light dispersion and provide spacing between the substrates.

Regarding claim 2 and 7, the Okamoto teaches a display, which further comprises a compensation film (fig. 3 element 30) and a polarizer (fig. 3 element 20).

Regarding claim 5 and 10, Wen teaches a column spacer (see cover fig. element 7).

Claim 12, 13 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Okamoto US Patent No. 5825445 in view Wen et al. US Patent No. 6208401 and further in view of Watanabe US Patent No. 5617228..

Regarding claim 12, Okamoto teaches a liquid crystal display comprising an upper substrate (fig. 3 element 11) with common electrode (fig. 3 element 11a) thereon, a lower substrate with pixel electrode thereon, a liquid crystal layer (fig. 3 element 13) injected between the upper and lower substrate.

Okamoto fails to teach spacers positioned between the upper substrate and the lower substrate, and wherein the light transmittance of the spacer is lower than 3%. Wen teaches a black spacer to avoid light dispersion (see column 3 lines 6-12) made of the same material as the black matrix to avoid dispersion and provide spacing between the substrates. Wen also teaches the spacers being an opaque material (see claim 5) which is defined as "impenetrable by light, neither transparent nor translucent", thus a zero percent transmittance is assumed. Therefore, at the time of the invention it would have been obvious to combine black spacers of zero percent transmittance with Okamoto's LCD in order to avoid light dispersion and provide spacing between the substrates.

Okamoto and Wen fail to teach a number of spacers less than 90 in one square millimeter, however Watanabe teaches a spacer density of 60 spacers/mm allows for smaller diameter spacers that does has no adverse affects to the display quality (column 13 line 65 – column 14 line 3). Therefore, at the time of the invention, it would have been obvious to one of ordinary skill in the art to use a spacer density of 60/mm (less than 90 mm) in order to eliminate adverse affects to the display quality.

Regarding claim 13, the Okamoto teaches a display, which further comprises a compensation film (fig. 3 element 30) and a polarizer (fig. 3 element 20).

Regarding claim 16, Wen teaches a column spacer (see cover fig. element 7).

Claims 18 – 19 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Okamoto et al. US Patent No. 5825445 in view of Wen , and further in view of Watanabe US Patent No. 5617228.

Regarding claim 18, Okamoto teaches a liquid crystal display comprising an upper substrate (fig. 3 element 11) with common electrode (fig. 3 element 11a) thereon, a lower substrate with pixel electrode thereon, a liquid crystal layer (fig. 3 element 13) injected between the upper and lower substrate.

Okamoto fails to teach spacers positioned between the upper substrate and the lower substrate and a number of spacers less than 90 in one square millimeter, however Watanabe teaches a spacer density of 60 spacers/mm allows for smaller diameter spacers that does has no adverse affects to the display quality (column 13 line 65 – column 14 line 3). Therefore, at the time of the invention, it would have been obvious to one of ordinary skill in the art to use a spacer density of 60/mm (less than 90 mm) in order to eliminate adverse affects to the display quality and provide uniform spacing between the substrate.

Regarding claim 19, the Okamoto teaches a display, which further comprises a compensation film (fig. 3 element 30) and a polarizer (fig. 3 element 20).

Regarding claim 22, Wen teaches a column spacer (see cover fig. element 7).

Claims 3-4 and 8-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Okamoto and Wen in view of Miller et. al. US Patent No. 5247378.

Okamoto and Wen teach all the limitations of claims 3-4 and 8-9 except the slow axis compensation film not parallel to the transmittance axis of the polarizer and the slow axis of the compensation layer and the angle of the slow axis of the compensation

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film and the transmittance of the polarizer being about 45 degrees. Miller teaches a slow axis oriented at 45 degrees to the axis of a polarizer to perform filtering with a narrow band pass. Therefore, at the time of the invention it would have been obvious to one of ordinary skill in the art to orient the slow axis 45 degrees from the transmission axis of the polarizer to perform filtering with a narrow band pass.

Claims 14 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Okamoto and Watanabe in view of Miller et. al. US Patent No. 5247378.

Okamoto and Watanabe teach all the limitations of claims 14-15 except the slow axis compensation film not parallel to the transmittance axis of the polarizer and the slow axis of the compensation layer and the angle of the slow axis of the compensation film and the transmittance of the polarizer being about 45 degrees. Miller teaches a slow axis oriented at 45 degrees to the axis of a polarizer to perform filtering with a narrow band pass. Therefore, at the time of the invention it would have been obvious to one of ordinary skill in the art to orient the slow axis 45 degrees from the transmission axis of the polarizer to perform filtering with a narrow band pass.

Claims 20 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Okamoto, Wen and Watanabe in view of Miller et. al. US Patent No. 5247378.

Okamoto, Wen, and Watanabe teach all the limitations of claims 20-21 except the slow axis compensation film not parallel to the transmittance axis of the polarizer and the slow axis of the compensation layer and the angle of the slow axis of the compensation film and the transmittance of the polarizer being about 45 degrees. Miller teaches a slow axis oriented at 45 degrees to the axis of a polarizer to perform filtering

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with a narrow band pass. Therefore, at the time of the invention it would have been obvious to one of ordinary skill in the art to orient the slow axis 45 degrees from the transmission axis of the polarizer to perform filtering with a narrow band pass.

Claims 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Okamoto, and Wen in view of Bos US Patent No. 5410422.

Okamoto and Wen teach all the limitations of claim 11 except a compensation layer that has a smaller dispersion of birefringence than the liquid crystal layer. Bos teaches a compensator birefringence with 60 to 85 percent the product of a cell gap distance and birefringence of the cell (dispersion birefringence of LC layer) to compensate for color shifting (see column 7 lines 46-65). Therefore, at the time of the invention, it would have been obvious to use a compensator with lower birefringence than the dispersion birefringence of the LC cell reduce color shifting the display.

Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Okamoto, Wen, and Watanabe in view of Bos US Patent No. 5410422.

Okamoto and Wen teach all the limitations of claim 17 except a compensation layer that has a smaller dispersion of birefringence than the liquid crystal layer. Bos teaches a compensator birefringence with 60 to 85 percent the product of a cell gap distance and birefringence of the cell (dispersion birefringence of LC layer) to compensate for color shifting (see column 7 lines 46-65). Therefore, at the time of the invention, it would have been obvious to use a compensator with lower birefringence than the dispersion birefringence of the LC cell reduce color shifting the display.

Claim 23 is rejected under 35 U.S.C. 103(a) as being unpatentable over Okamoto and Watanabe in view of Bos US Patent No. 5410422.

Okamoto and Wen teach all the limitations of claim 23 except a compensation layer that has a smaller dispersion of birefringence than the liquid crystal layer. Bos teaches a compensator birefringence with 60 to 85 percent the product of a cell gap distance and birefringence of the cell (dispersion birefringence of LC layer) to compensate for color shifting (see column 7 lines 46-65). Therefore, at the time of the invention, it would have been obvious to use a compensator with lower birefringence than the dispersion birefringence of the LC cell reduce color shifting the display.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Phu Vu whose telephone number is (571)-272-1562. The examiner can normally be reached on 8AM-5PM M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Kim can be reached on (571)-272-2293. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Phu Vu
Examiner
AU 2871



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EXAMINER